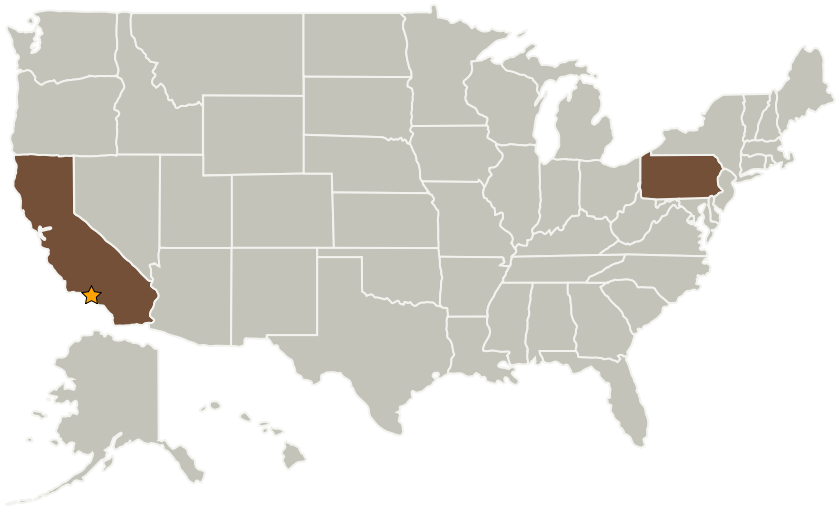
Hybrid Cooling Loop Technology for Robust High Heat Flux Cooling, Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

Advanced Cooling Technologies, Inc. (ACT) proposes to develop a hybrid cooling loop and cold plate technology for space systems thermal management. The proposed technology combines the high heat flux performance of active cooling loops with the effective fluid management of passive cooling devices. The result is a simple, robust and high performance cooling technology that allows maximum degree of packaging flexibility. The principal Phase I objective is to demonstrate the basic concept of combining mechanical pumping and capillary force for improved heat flux capability and fluid management. This objective will be fulfilled through modeling/analysis and proof-of-concept testing. It is expected that the Phase I results will bring the proposed concept to the NASA defined Technology Readiness Level (TRL) 4: Breadboard validation in a laboratory environment. Phase II will verify the technology?s operational robustness under transient and startup conditions and package the technology in miniaturized and lightweight configurations for compact system cooling. The follow-on Phase III will conduct flight qualification testing of the technology to address the micro gravity effects and the system integration.

Primary U.S. Work Locations and Key Partners



Hybrid Cooling Loop Technology for Robust High Heat Flux Cooling, Phase I

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

Hybrid Cooling Loop Technology for Robust High Heat Flux Cooling, Phase I

Completed Technology Project (2004 - 2004)

Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Advanced Cooling Technologies, Inc.	Supporting Organization	Industry	Lancaster, Pennsylvania

Primary U.S. Work Locations	
California	Pennsylvania

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jon Zuo

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.1 Heat Acquisition